

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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PCT

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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

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07.07.2004

Applicant's or agent's file reference
pct/sk03D0007

IMPORTANT NOTIFICATION

International application No.
PCT/SK 03D0007

International filing date (day/month/year)
09.04.2003

Priority date (day/month/year)
09.04.2002

Applicant
MATADOR A.S. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)



29 SEP 2004

Applicant's or agent's file reference pct/sk03/00007	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SK 03/00007	International filing date (day/month/year) 09.04.2003	Priority date (day/month/year) 09.04.2002
International Patent Classification (IPC) or both national classification and IPC B29D30/20		
Applicant MATADOR A.S. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 09.10.2003	Date of completion of this report 07.07.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Fregosi, A Telephone No. +49 89 2399-7104 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/SK 03/00007

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-13 as originally filed

Claims, Numbers

1-12 filed with telefax on 18.06.2004

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/SK 03/00007**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. State of the Art

Reference is made to the following documents:

D1: EP 580142 - A;

D2: EP 503532 - A

D3: US 5853525 - A

- 2.** The document **D1** is regarded as being the closest prior art to the subject-matter of claim 1 , and shows (the references in parentheses applying to this document):

"an assembly of devices for production of green tyres, consisting of a belt building drum (11a,b), a tread building drum (11a,b), a carcass building drum (1) and a tyre building drum (2), and further including devices for transferring particular semi-products from one device to another, a device (4) for positioning and supporting the bead cores and the carcass assembly, a stitching device (9) and material servicers (22, 23, 24, 25), which are associated with the respective drums, wherein:

- a) - there are provided two parallel transfer tracks;
- b) - on the first transfer track (8) there are provided:
 - the carcass building drum (1),
 - the tyre building drum (2), which is oriented opposite to the building drum (1),and
 - the device (4) for supporting and adjusting the bead cores and the carcass assembly which is disposed between the carcass building drum (1) and the tyre building drum (2);
- c) - on the second transfer track there are provided:
 - the movably disposed belt building drum (11a,b),
 - the movably disposed tread building drum (11a,b);
- d) - an auxiliary track (26) is arranged perpendicularly to the first (8) and second transfer track in a horizontal plane above the first and second transfer track at the completing place, wherein a transfer ring (5) is disposed below the auxiliary track (26) to deliver the belt-tread assembly to the completing place;
- e) - the device (23) is provided for spiralling a narrow strip together with a servicer

for the narrow strip to be spiralled, which is associated with the tread winding drum (11b);

f) - a servicer (10) is provided for supplying materials for preparation of the carcass assembly to the carcass building drum (1);

g) - the servicers (24, 25) are provided for supplying breaker plies to the belt building drum (11a,b);

h) - the servicer (22) is provided for supplying tread to the tread winding drum (11a,b) for production of the belt-tread assembly; and

l) - the stitching device (9) for forming the tyre edges is disposed close to the first transfer track (8) at the completing place".

3. The subject-matter of claim 1 differs from this known D1 for the following reasons:

j) - the carcass building drum (30) and the tyre building drum (130) are movably disposed on the first transfer track (20), while in D1 the corresponding carcass building drum (1) and tyre building drum (2) are fixed; and

k) - between the movably disposed belt building drum (60) and the tread winding drum (70) there is provided a transfer ring (80) to transfer the belt from the building drum (60) onto the tread building drum (70), while in D1 such a transfer ring is not foreseen.

The subject-matter of claim 1 is therefore new according to Article 33(2) PCT.

4. The problem to be solved by the present disclosure may be regarded as the one of improving the overall efficiency of the tyre manufacturing plant by shortening the cycles of transferring intermediate tyre components from one manufacturing station to the other (see description of the present application, page 8, last paragraph).

5. Although the same problem has been already acknowledged in the prior art (see, for example, document D2, col.1, lines 20-24, and document D3, col. 7, lines 16-21) and each manufacturing device listed in the paragraphs 2. and 3. above is already known per se, nevertheless the solution proposed by present claim 1, which discloses a specific combination of all these features, is neither known nor derivable from the state of the art.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/SK03/00007

6. The contribution of claim **1** over the prior art can be regarded as to provide a non-obvious alternative to known tyre manufacturing plants; therefore claim **1** complies with the requirements of inventivity as stated in Art. 33 (3) PCT.
7. Claims **2** to **9** are dependent on claim **1** and as such also meet the requirements of the PCT with respect to novelty and inventive step.
8. Claims **10** to **12** disclose methods of manufacturing a tyre using the new and inventive apparatuses of claims **1** to **9**; therefore they are also considered to meet the requirements of Articles 33 (2) and (3) PCT.
9. All claims **1** to **12** satisfy the requirements of industrial applicability as stated in Art. 33 (4) PCT.

Certain observations on the international application

10. Although claim **1** is drafted in the two-part form, the features a) to i) mentioned in paragraph 2. above are incorrectly placed in the characterising portion, as they are disclosed in document **D1** in combination with the features placed in the preamble (Rule 6.3(b) PCT).

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CLAIMS

1. An assembly of devices for production of green tyres, consisting of a belt building drum, a tread building drum, a carcass building drum and a tyre building drum, and further including devices for transferring particular semi-products from one device to another, a device for positioning and supporting the bead cores and the carcass assembly, a stitching device and material servisers, which are associated with the respective drums, characterized in that it is arranged on two parallel transfer tracks (20 and 50) and it comprises:

on a first transfer track (20), a movably disposed carcass building drum (30), a movably disposed tyre building drum (130), which is oriented opposite to the building drum (30), a device (150) for supporting and adjusting the bead cores and the carcass assembly being disposed between the building drum (30) and the tyre building drum (130),

on a second transfer track (50), a movably disposed belt building drum (60), a tread building drum (70), between the movably disposed building drum (60) and the winding drum (70) being disposed a first transfer ring (80) to transfer the belt from the building drum (60) onto the tread building drum (70),

an auxiliary track (90), arranged perpendicularly to the first and second transfer track (20, 50) in a horizontal plane above the first and second transfer track (20, 50) at the completing place (140), which is disposed on the first transfer track (20), wherein a second transfer ring (100) is disposed below the auxiliary track (90) to deliver the belt-tread assembly to the completing place (140) as well to remove the complete green tyre,

a device (170) for spiralling a narrow strip together with a serviser for the narrow strip to be spiralled, which is associated with the winding drum (70),

a serviser (180) for supplying materials for preparation of the carcass assembly to the carcass building drum (30),

servisers (190) for supplying breaker plies to the belt building drum (60),

a serviser (200) for supplying tread to the winding drum (70) for production of the belt-tread assembly,

a stitching device (160) for forming the tyre edges, which is disposed close to

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the transfer track (20) at the completing place (140).

2. An assembly of devices for production of green tyres according to claim 1, characterized in that

5 the belt building drum (60) is carried by a shaft of the machine house (40), which is movably disposed on the second transfer track (50), and the winding drum (70) for production of the belt-tread assembly is carried by a shaft of a second machine house (42), which is also movably disposed on the second transfer track (50), and the drums are arranged on one horizontal axis and oriented one against each other.

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3. An assembly of devices for production of green tyres according to claim 1, characterized in that

15 the belt building drum (60) and the winding drum (70) for production of the belt-tread assembly are carried by two independent, coaxially arranged shafts on one axis with the machine house (40), which is movably disposed on the second transfer track (50), being arranged so that the building drum (60) is disposed closer to the machine house (40) and the building drum (70) is arranged further apart from the machine house (40), and a first transfer ring (80) is movably disposed therebetween.

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4. An assembly of devices for production of green tyres according to any of the claims 1 or 2, characterized in that

25 the device (150) for supporting and adjusting the bead cores and the carcass assembly, is movably disposed on the first transfer track (20) between the building drum (30) and the tyre building drum (130).

5. An assembly of devices for production of green tyres according to any of the claims 1 or 3, characterized in that

30 the device (150) for supporting and adjusting the bead cores and holding the carcass assembly is disposed on the first transfer track (20) at the completing place (140).

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6. An assembly of devices for production of green tyres according to any of the claims 1, 2 or 4, characterized in that a second transfer ring (100) for delivering the belt-tread assembly to the completing place (140), as well as for removing the complete green tyre, is movably suspended on the auxiliary track (90) and moving along the auxiliary track (90) in a vertical plane, perpendicular to the transfer tracks (20 and 50) and intersecting the transfer track (20) at the completing place (140).

7. An assembly of devices for production of green tyres according to any of the claims 1, 3 or 5, characterized in that the auxiliary track (90) with the second transfer ring (100) is provided in the form of a transfer device (91), equipped with 2 to 4 transfer rings (101 to 104), which are regularly displaced and arranged rotationally around a rotation axis parallel to the first and second transfer track (20, 50), wherein the transfer rings (101 to 104) are rotationally disposed in a vertical plane, perpendicular to the rotation axis, as well as to both the first and the second transfer track (20, 50), wherein if one of the rings (101 to 104) extends to the completing place (140) and is disposed on one axis with the tyre building drum (130), the opposite ring (101 to 104) is disposed on the axis of the building drums (60 and 70).

8. An assembly of devices for production of green tyres according to any of the claims 1, 2, 4 or 6, characterized in that a stitching device (160) is disposed at the completing place from the outside of the first transfer track (20).

9. An assembly of devices for production of green tyres according to any of the claims 1, 3, 5 or 7, characterized in that the stitching device (160) is disposed at the completing place (140) from the inner side of the first transfer track (20) and below the transfer device (91).

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10. A method for production of green tyres applying to the assembly of devices according to any of claims 1, 2, 4, 6 or 8, characterized in that it includes the following steps:

- 5 - belt preparation on the belt building drum (60), which is disposed on the second transfer track (50), by winding up the first and subsequently the second breaker ply delivered from breaker ply servisers;
- belt transfer from the building drum (60) onto the winding drum (70) by a movement of the first transfer ring (80) on the second transfer track (50);
- winding up the tread (7) onto the belt, wherein the tread is supplied from the 10 tread serviser (200) and a belt-tread assembly results;
- shifting the belt-tread assembly into the area of the auxiliary track (90);
- clamping and transfer of the belt-tread assembly to the completing place (140) by the second transfer ring (100);
- preparation of a carcass assembly, consisting of the tyre sidewalls, the inner 15 rubber and one or two carcass plies, on a building drum (30), disposed on the first transfer track (20), from carcass materials supplied by a combined serviser (180) of the carcass assembly;
- transfer of the carcass assembly from the building drum (30) into the device (150) for supporting and adjusting the bead cores and carcass assembly and 20 adjusting the bead cores into the correct position;
- transfer of the carcass assembly with adjusted bead cores by the device (150) for adjusting and supporting the bead cores and carcass assembly onto the tyre building drum (130) by a movement on the first transfer track to the completing place (140);
- 25 - completion of the green tyre on the tyre building drum (130), including rotating the tyre building drum (130), inflating the carcass assembly, wrapping the bead cores, bringing them closer to each other and subsequent creating the tyre sidewalls and attaching the belt-tread assembly;
- stitching the belt-tread assembly by the stitching device (160);
- 30 - clamping and transfer of the completed green tyre by the second transfer ring (100) to a place, where it can be removed.

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11. A method for production of green tyres applying to the assembly of devices according to any of claims 1, 3, 5, 7 or 9, characterized in that it includes the following steps:

- belt preparation on the belt building drum (60), which is disposed on the second transfer track (50), by winding up the first and subsequently the second breaker ply delivered from breaker ply servisers (190);
- belt transfer from the building drum (60) onto the winding drum (70) by a movement of the first transfer ring (80) on the second transfer track (50);
- winding up the tread (7) onto the belt, where the tread is supplied from the tread serviser (200) and a belt-tread assembly results;
- shifting the belt-tread assembly into the area of one of the transfer rings (101 to 104) of the transfer device (91), which is currently present in the area of the second transfer track on the axis of the building drums (60, 70);
- preparation of a carcass assembly, consisting of the tyre sidewalls, the inner rubber and one or two carcass plies, on the building drum (30), disposed on the first transfer track (20), from carcass materials supplied by a combined serviser (180) of the carcass assembly;
- transfer of the carcass assembly by the carcass building drum (30) into the device (150) for adjusting and supporting the bead cores and carcass assembly and adjusting the bead cores into the correct position;
- taking over the carcass assembly with adjusted bead cores by the tyre building drum (130) from the device (150) at the completing place (140) and transfer of the tyre building drum (130) to the starting position;
- transfer of the belt-tread assembly to the completing place (140) by one of the transfer rings (101 to 104) of the transfer device (91);
- transfer of the carcass assembly with adjusted bead cores to the completing place (140);
- completion of the green tyre on the tyre building drum (130), including rotating the tyre building drum (130), inflating the carcass assembly, wrapping the bead cores, bringing them closer to each other and subsequent creating the tyre sidewalls and attaching the belt-tread assembly;
- stitching the belt-tread assembly by the stitching device (160);

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- clamping and transfer of the completed green tyre by a transfer ring (101 to 104) of the transfer device (91) to a place, where it can be removed.

12. A method for production of green tyres according to claim 10 or 11,
5 characterized in that
after having transferred the belt onto the tread building drum and before the tread building a narrow strip supplied from a serviser (210) is wound up on the belt in a spiralled manner by a winding device (170) for spiralling the narrow strip.

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